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Response

Remarks

Claim 101-116 and 123-224 are pending.

The Examiner has withdrawn Claims 101-116, 123-142, 156-166, 194 and 195.

Claims 143, 149, 154, 155, 173, 176, 179, 182, 186, 190, and 196-223 have been amended to clarify the subject matter claimed as overlying epitaxial silicon *crystals* each having a *top surface defining a facet*. Support for the amendment to the claims is in Claims 106, 114, 130, and 131 and the specification, for example, at page 2 (lines 24-25), page 4 (lines 23-26), page 9 (lines 14-15), and page 11 at lines 21-23, and the Abstract at lines 11-14.¹

Support for new Claim 224 is in Claim 131, and the specification.

No new matter has been added with the amendments, which are intended to merely clarify language used in the claims and the subject matter claimed. The scope of the claims is intended to be the same after the amendment as it was before the amendment.

Rejection of Claims under 35 U.S.C. §§ 102(b) and 103(a)

The Examiner responded to Applicant's responsive arguments by maintaining the rejection of Claims 143-145, 147, 149-155, 167-193, and 196-223 under Section 102(b) as anticipated by USP 5,483,094 (Sharma), and the rejection of Claims 146 and 148 under Section 103(a) as obvious over Sharma. Insofar as these rejections are maintained with respect to the claims as amended, these rejections are respectfully traversed.

The claims as amended now more clearly define Applicant's structures as overlying epitaxial silicon *crystals* — each of the crystals with a top surface defining a *facet*. As recited in new Claim 224, the top surface of at least one of the epitaxial silicon crystals defines a facet having a (100) plane orientation.

By comparison, Sharma describes silicon pillar 31 as a *single silicon crystal*. The *single silicon crystal* has three regions 32, 33, and 34.

¹ Specification at page 4, lines 23-26 (emphasis added): "In one embodiment of a transistor, the transistor gate comprises at least two overlying layers of epitaxially grown silicon, *each epitaxial layer comprising a single silicon crystal having a top or upper surface defining a facet*, preferably having a (100) plane orientation, and vertically oriented and insulated sidewalls..."

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In the Abstract — Sharma states:

An electrically programmable read-only memory cell includes a single crystal silicon pillar having the active region of the memory cell. A memory array of the cells may be configured to act as an EPROM array, an EEPROM array, or a flash EEPROM array. A silicon spacer lies adjacent to each of the silicon pillars and acts as a floating gate for its particular memory cell. A memory cell may have a cell area that is less than one square micron. In an EPROM or a flash EEPROM array, no field isolation is required between the memory cells within the array. Processes for forming the memory cells and the memory array are disclosed.

In the Specification at col. 3, lines 1-3 — Sharma states (emphasis added):

The present invention includes a memory cell that has a single crystal silicon pillar formed over a buried layer or doped region. The invention may be particularly useful for making EPROM, EEPROM, or flash EEPROM arrays within semiconductor devices. Embodiments of the present invention are described in more detail below. The present invention is not limited to the embodiments described.

Applicant's structure is composed of at least two overlying and separate crystals — not two layers within a single crystal as taught by Sharma. In addition, each of the single silicon crystals of Applicant's structures a top/upper surface defining a *facet*.

Sharma describes a single crystal epitaxial silicon layer 31 comprising three dopant regions. Sharma's doped regions or layers 32, 33, and 34 are not three separate crystals. Sharma's regions/layers 32, 33, 34 are part of a single crystal silicon pillar 31. In addition, Sharma's layers 32, 33, and 34 do not have a faceted top surface.

Applicant believes that the claims as amended clearly define over the cited prior art.

Sharma's description of a single crystal epitaxial layer having different doped regions does not teach or suggest Applicant's structures as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Extension of Term. The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

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Fee for additional claim. It is believed that no fee is due. However, if a fee is required, please charge Account No. 23-2053.

Based on the above remarks, the Examiner is respectfully requested to reconsider and withdraw the rejections of the claims. It is submitted that the present claims are in condition for allowance, and notification to that effect is respectfully requested.

Respectfully submitted,

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